2014

YRD-E100 User's Manual

www.yerendian.com

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1. INTRODUCTION

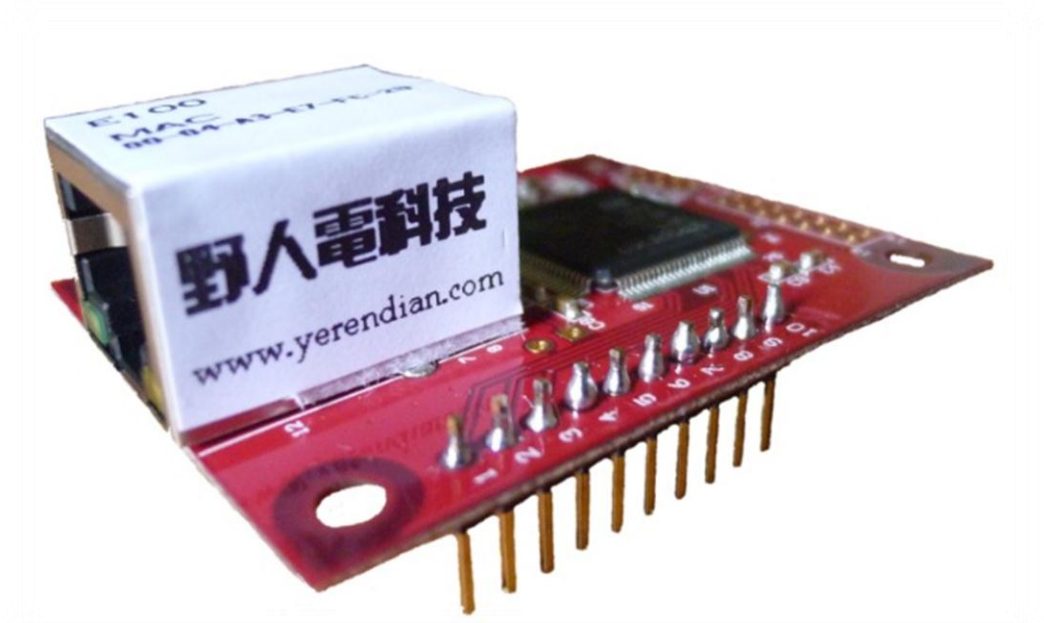
1.1 DESCRIPTION

野人電科技的 E100 嵌入式設備連網伺服器是特別為了串列設備能夠簡易的快速連上雲端而設計。

應用於實際產品時，可以選擇 AT Command Mode ,MODBUS Gateway Mode 或 Direct Mode, 不管那種模式都只要簡易幾個步驟就可以輕易的讓原有的串列產品連上網路。

藉助 Cortek-M3 系統晶片的強大運算能力，E100 支援 10/100Mbps 乙太網路、高達 230400 bps 的串列傳輸率、多樣化且立即可用的標準操作模式，並且只需要少量的電源。

利用野人電科技研究團隊持續創新技術，E100 可用於將任何具有標準串列介面的設備即時轉換為具備乙太網路功能。



1.2 FORM FACTOR

Type: Pin header module

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Dimensions: 52 x 40 x 20 mm

Weight: 12 g

1.3 SYSTEM INFORMATION

CPU: 32-bit ARM Cortek-M3

RAM: 128 KB built in

Flash: 1 MB built in

MAC: built in

1.4 ETHERNET INTERFACE

Number of Ports: 1

Speed: 10/100 Mbps, auto MDI/MDIX

Connector: RJ45

Magnetic Isolation Protection: 1.5 KV built-in

LED Link

1.5 SERIAL INTERFACE

Number of Ports: 1

Transmission Format: Standard TTL

1.6 SERIAL COMMUNICATION PARAMETERS

Data Bits: 8

Stop Bits: 1

Parity: None /Even /Odd

Flow Control: None

Baud rate: 2400 /4800 /9600 /19200 /38400 /57600/ 115200 /230400 bps

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1.7 SERIAL SIGNALS

TTL: TXD, RXD, GND

TTL: RS485 direction control

1.8 DIGITAL I/O PINS

GPIO: 32 configurable I/O pins

UART *3 /SPI *1 /I2C *1 /ADC *5 /CAN *1 /GPIO

1.9 SOFTWARE

Network Protocols: ICMP, ARP, IP, TCP, UDP, DHCP, HTTP, SMTP, TFTP

Configuration Options: Web console, Configuration tool software for windows

Working Mode: AT command mode /MODBUS gateway mode /Direct mode

Update : Firmware /Web upgrade over Ethernet

1.10 ENVIRONMENTAL LIMITS

Operating Temperature:

Standard Models: 0 to 55℃ (32 to 131°F)

Wide Temp. Models: -40 to 85℃ (-40 to 185°F)

Storage Temperature (package included): -40 to 60℃ (-40 to 140°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

1.11 POWER REQUIREMENTS

Input Voltage: 3.3 VDC (±5%)

Power Consumption: 100 mA @ 3.3 VDC input max.

1.12 WARRANTY

Warranty Period: 1 years

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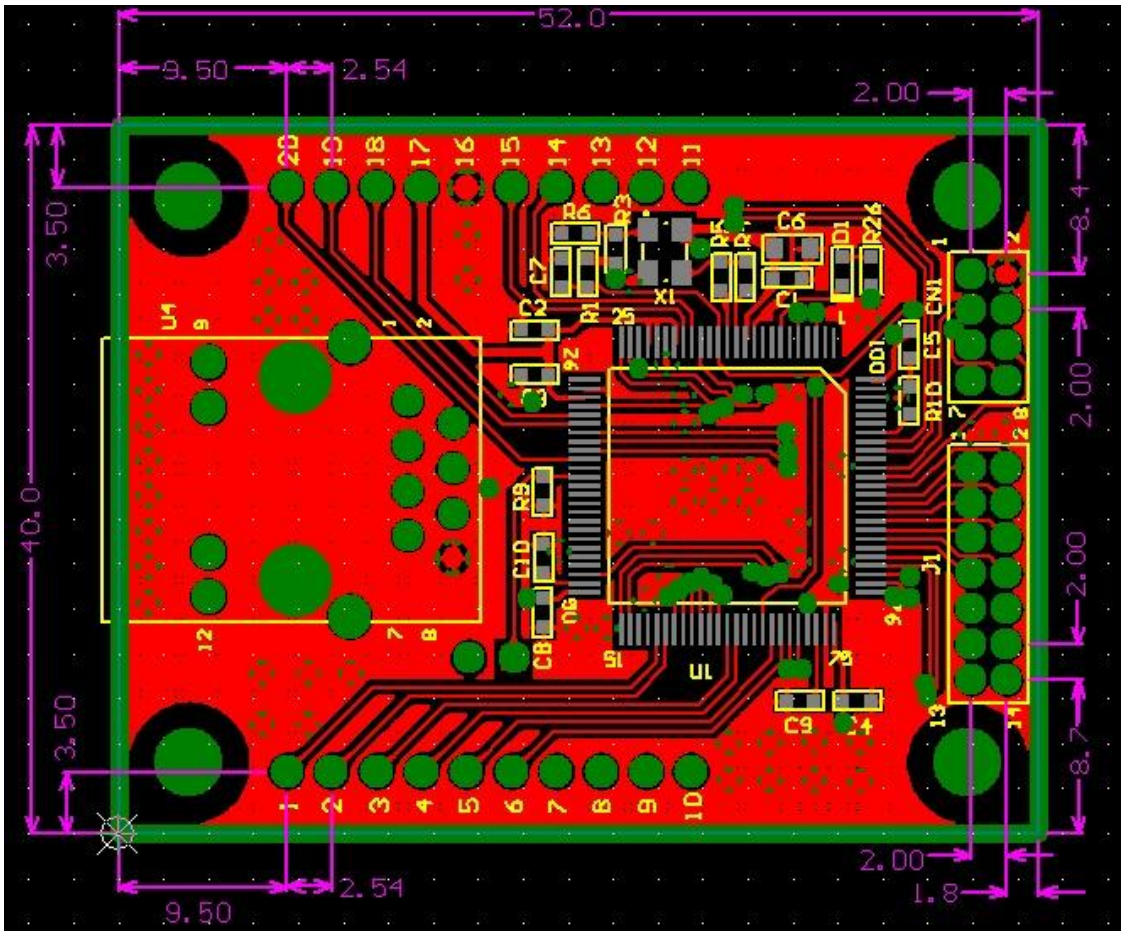
Details: See www.yerendian.com

1.13 DIMENSION

Unit: mm



1.14 PIN ASSIGNMENT-1

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Main Pins (20 Pins)		
Pin	Signal Name	Function
1	UART3-TX /PD8	Communication port TX
2	UART3-RX /PD9	Communication port RX
3	UART6-TX /PC6	System reserve
4	UART6-RX /PC7	System reserve
5	UART1-TX /PA9	UART /GPIO
6	UART1-RX /PA10	UART /GPIO
7	CAN1-RX /PA11	CAN /GPIO
8	CAN1-TX /PA12	CAN /GPIO
9	SPI3-MISO /PC11	SPI /GPIO
10	SPI3-MOSI /PC12	SPI /GPIO
11	SPI3-CLK /PC10	SPI /GPIO
12	I2C1-CLK /PB6	I2C/GPIO
13	I2C-SDA /PB7	I2C/GPIO
14	ADC12IN-12 /PC2	ADC /GPIO
15	ADC12IN-13 /PC3	ADC /GPIO
16	GND	GND
17	VCC	Power (+3.3Vdc)

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18	ADC12IN-5 /PA5	ADC /GPIO
19	ADC12IN-6 /PA6	RS458 Direction
20	ADC12IN-8 /PB0	ADC /GPIO

1.15 PIN ASSIGNMENT-2

J1 Description (14 Pins)		
Pin	Signal Name	Function
1	PD6	GPIO
2	PD7	GPIO
3	PD4	GPIO
4	PD5	GPIO
5	PD2	GPIO
6	PD3	GPIO
7	PD0	GPIO
8	PD1	GPIO
9	PD14	GPIO
10	PD15	GPIO
11	PD12	GPIO
12	PD13	GPIO

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13	PD10	GPIO
14	PD11	GPIO

1.16 PIN ASSIGNMENT-3

CN1 Description (8 Pins)		
Pin	Signal Name	Function
1	VCC	Power (+3.3Vdc)
2	GND	GND
3	TRST	JTAGE
4	TCK /SWCLK	JTAGE
5	TDI	JTAGE
6	TDO /SWO	JTAGE
7	TMS /SWDIO	JTAGE
8	#RESET	Reset

1.17 JP1 PIN ASSIGNMENT

System reset to default if JP1 short over 5 sec.

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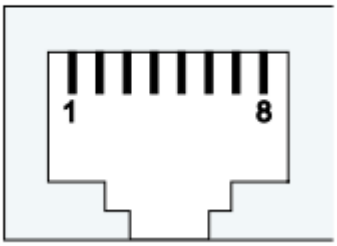
1.18 ETHERNET PORT PIN ASSIGNMENT

RJ45



Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-

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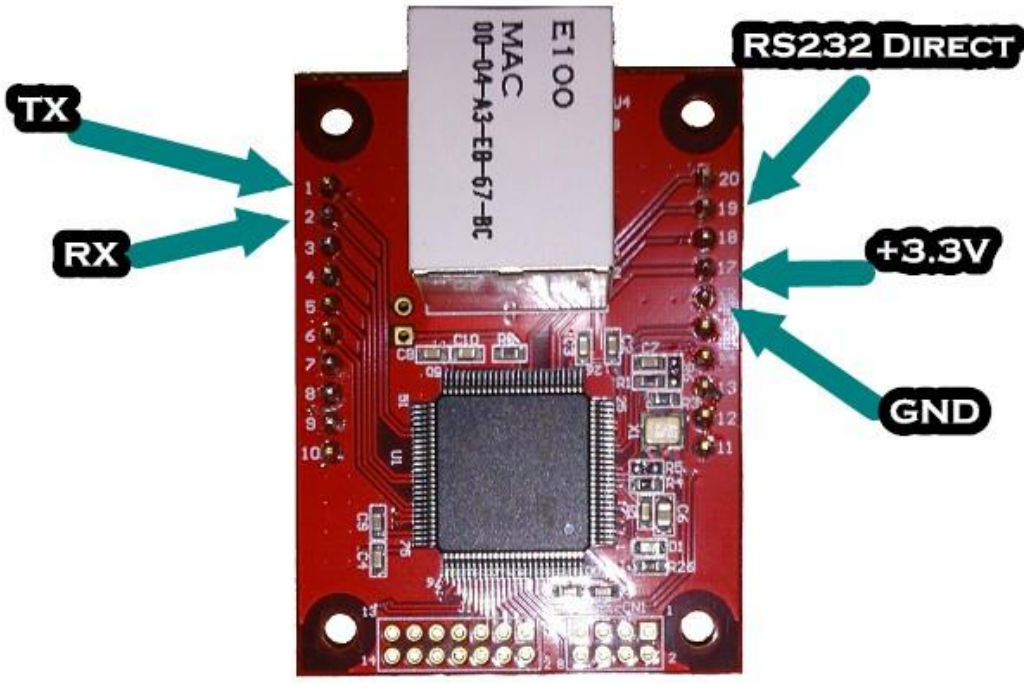
2. GETTING STARTED

2.1 INSTALL THE E100 MODULE ONTO THE CUSTOMER'S BOARD

Please refer to the figure below. When attaching the module to the customer's board, make sure the module is securely installed on the evaluation board. After the module is installed, connect the power supply, network, and serial device to the customer's board.



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3. CHOOSING THE PROPER OPERATION MODE

The E100 supports several tools for configuring the module. In this chapter we briefly describe the options available and appropriate situations for using those options.

The following topics are covered in this chapter:

- AT Command Mode (TCP Client)
- MODBUS Gateway Mode (TCP Server)
- Direct Mode (TCP Client)
- Direct Mode (TCP Server)

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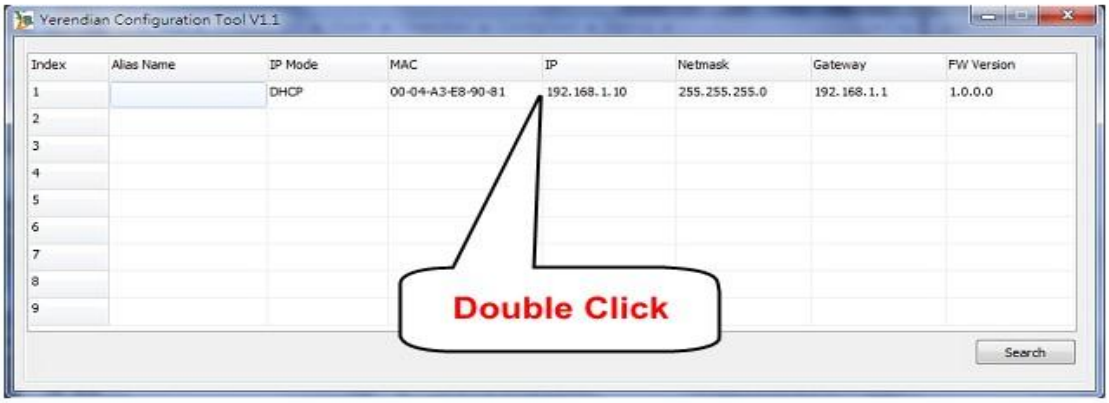
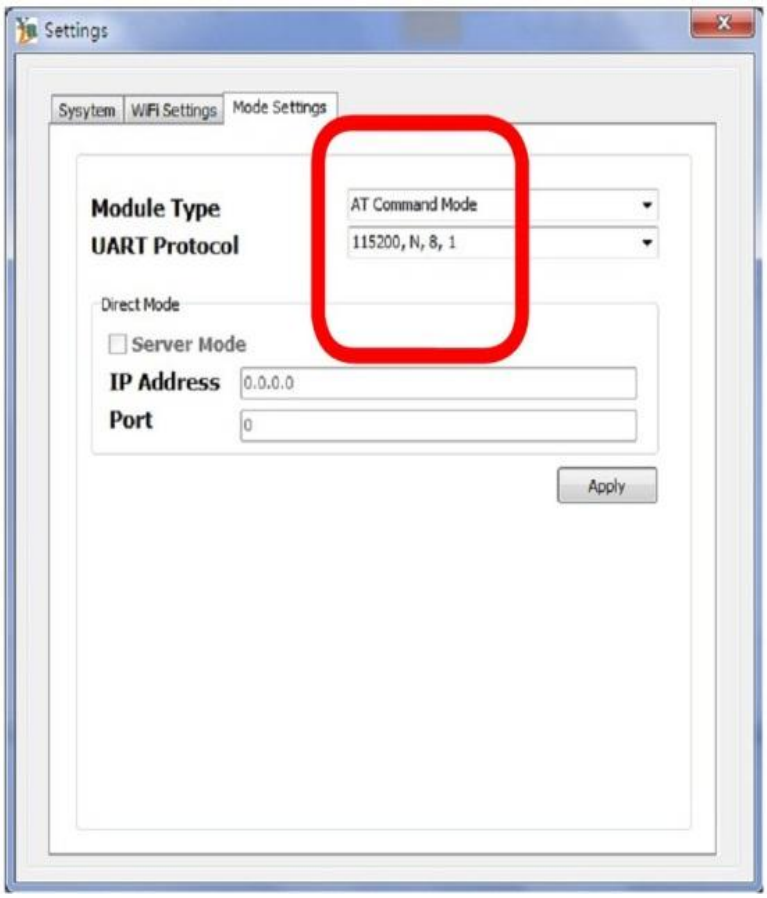
3.1 AT COMMAND MODE (TCP CLIENT)

3.1.1 Using utility configuration:





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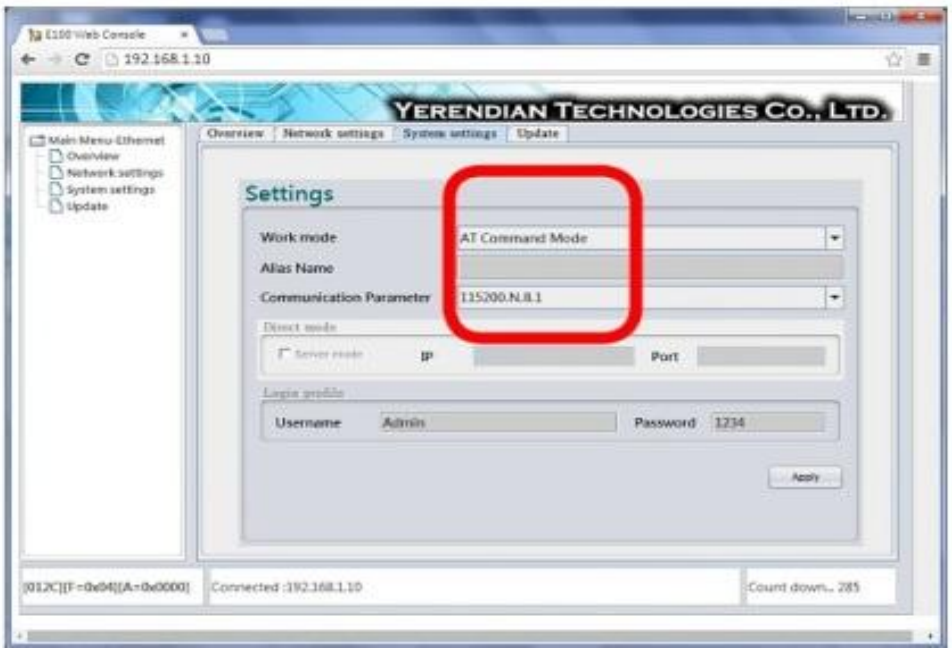
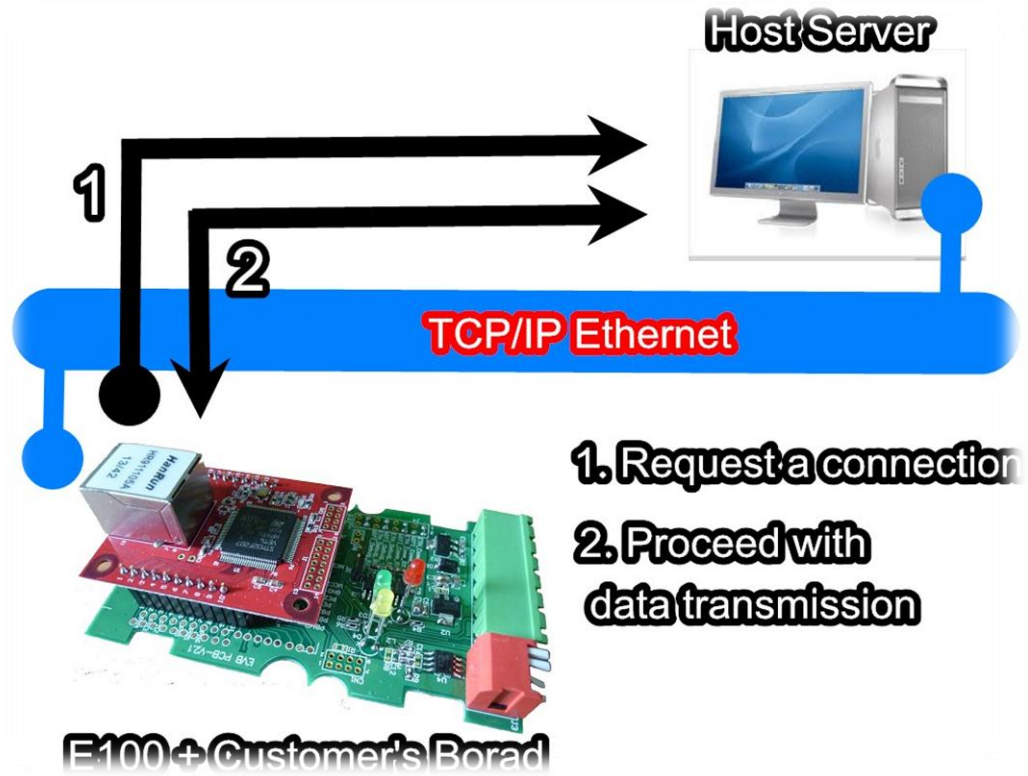
3.1.2 Using WEB console configuration:



3.1.3 Schematic diagram:



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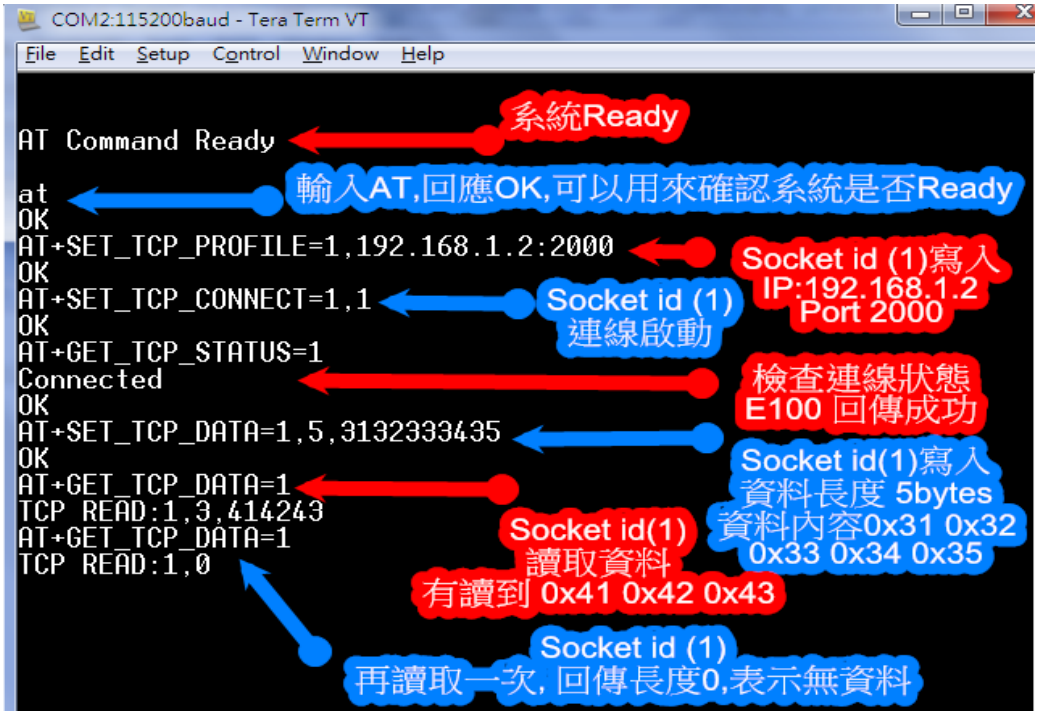
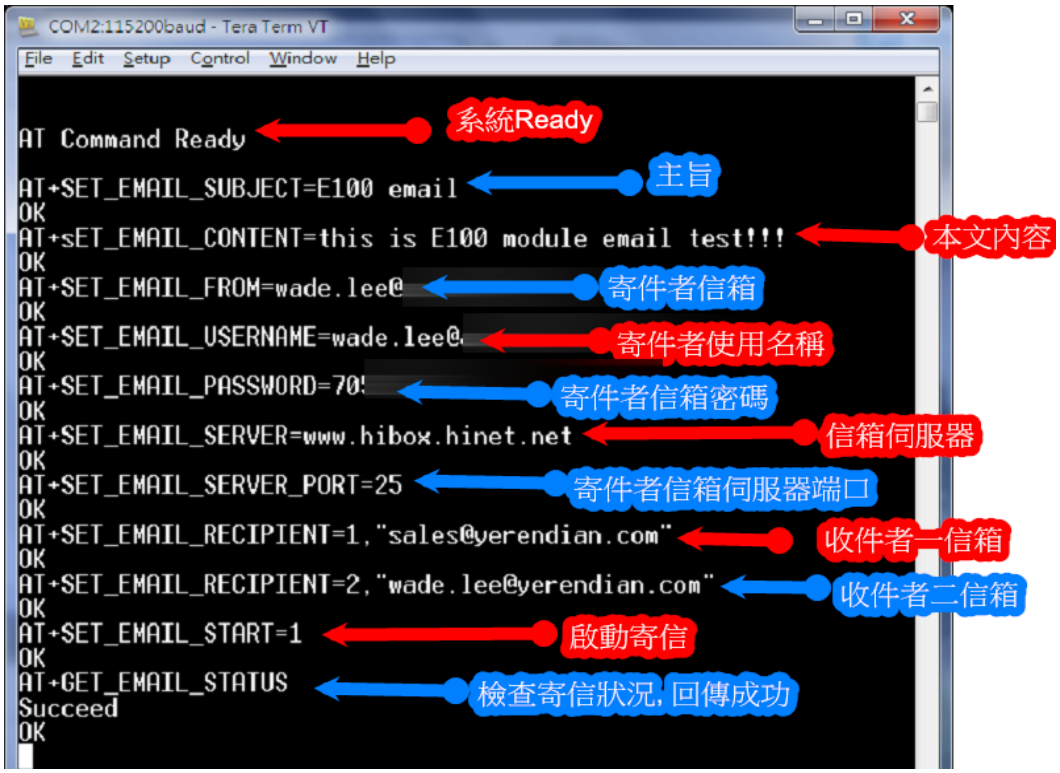
3.1.4 TCP client example:



3.1.5 E-Mail example:



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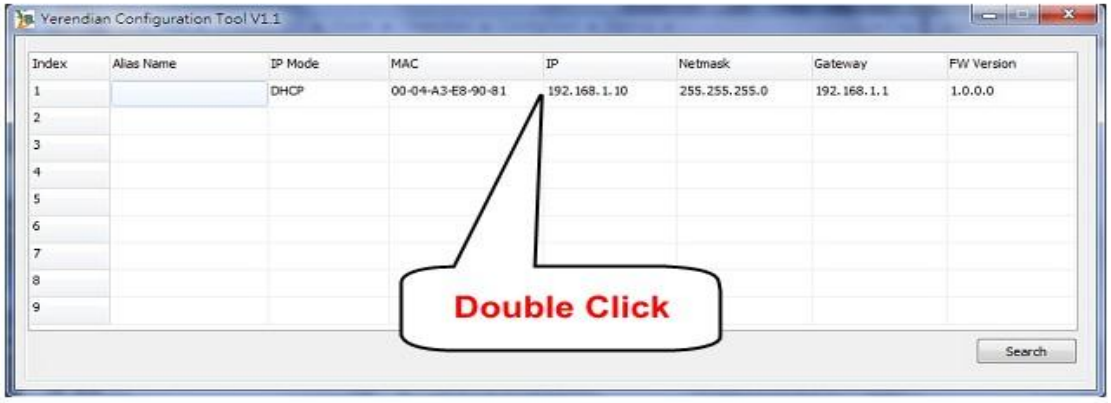
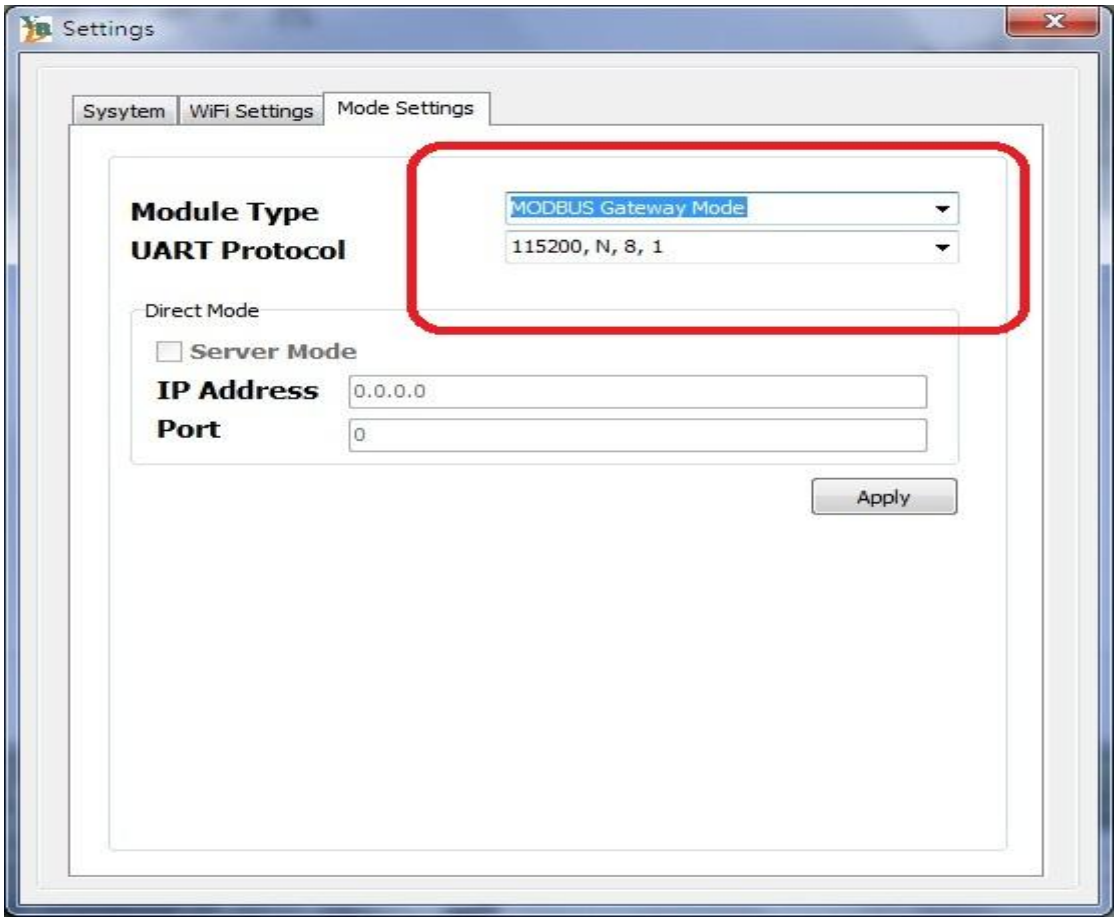
3.2 MODBUS GATEWAY MODE (TCP SERVER)

3.2.1 Using utility configuration:





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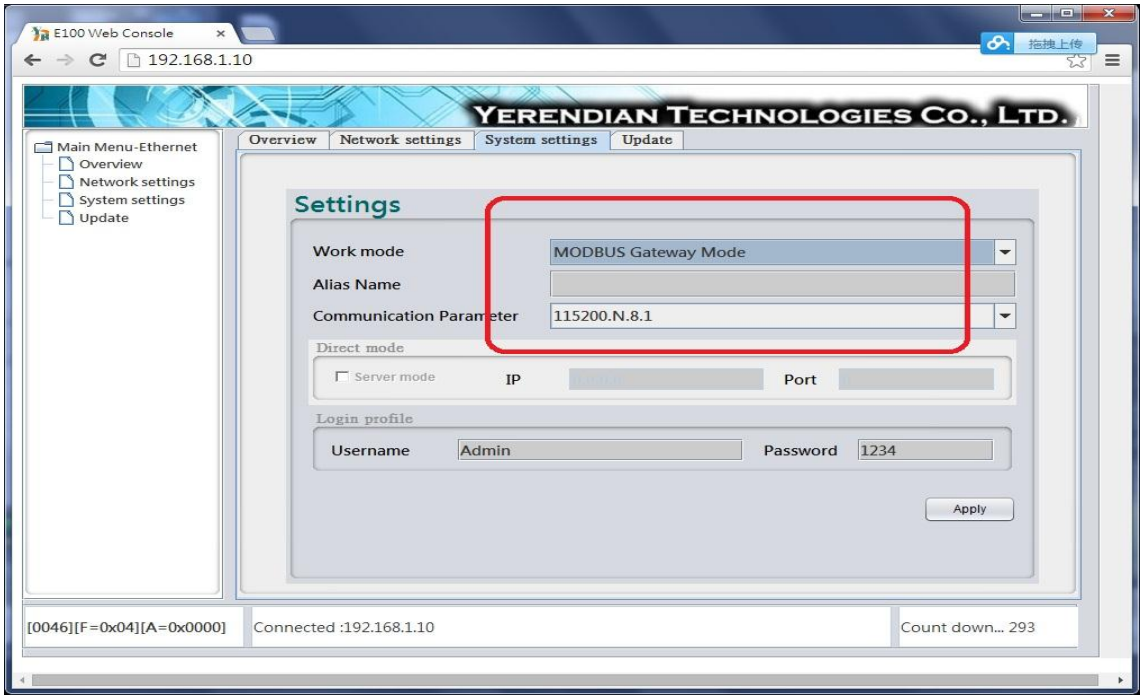
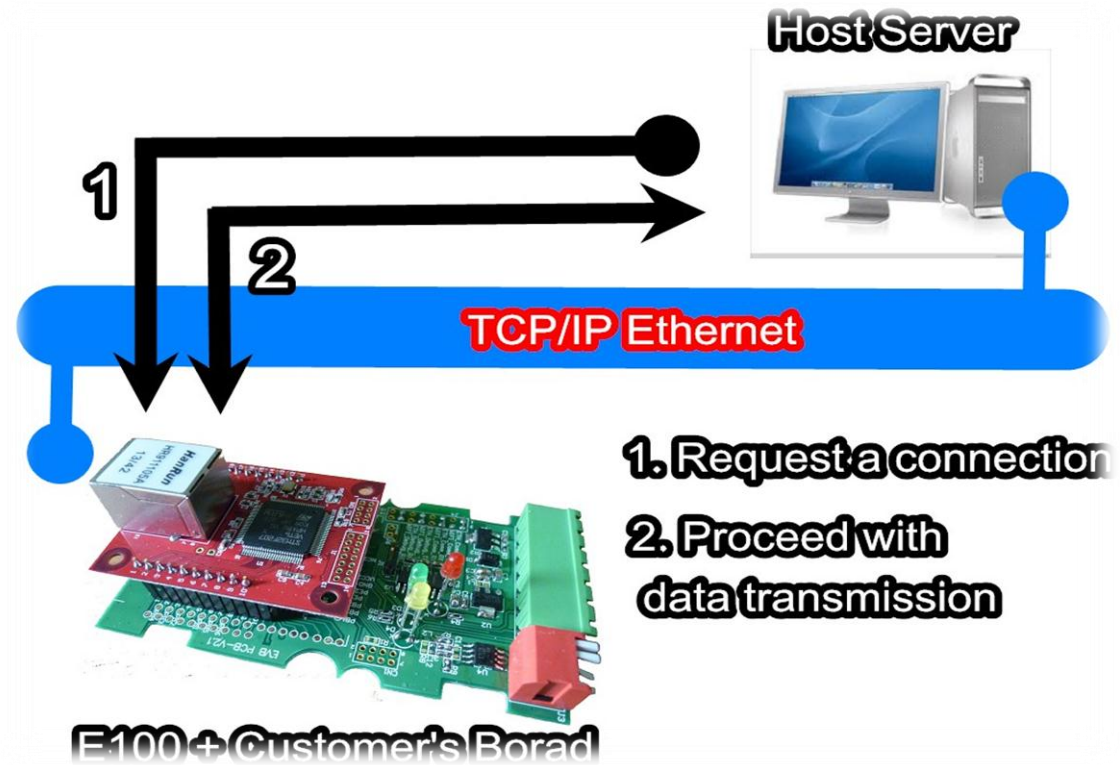
3.2.2 Using WEB console configuration:



3.2.3 Schematic diagram:



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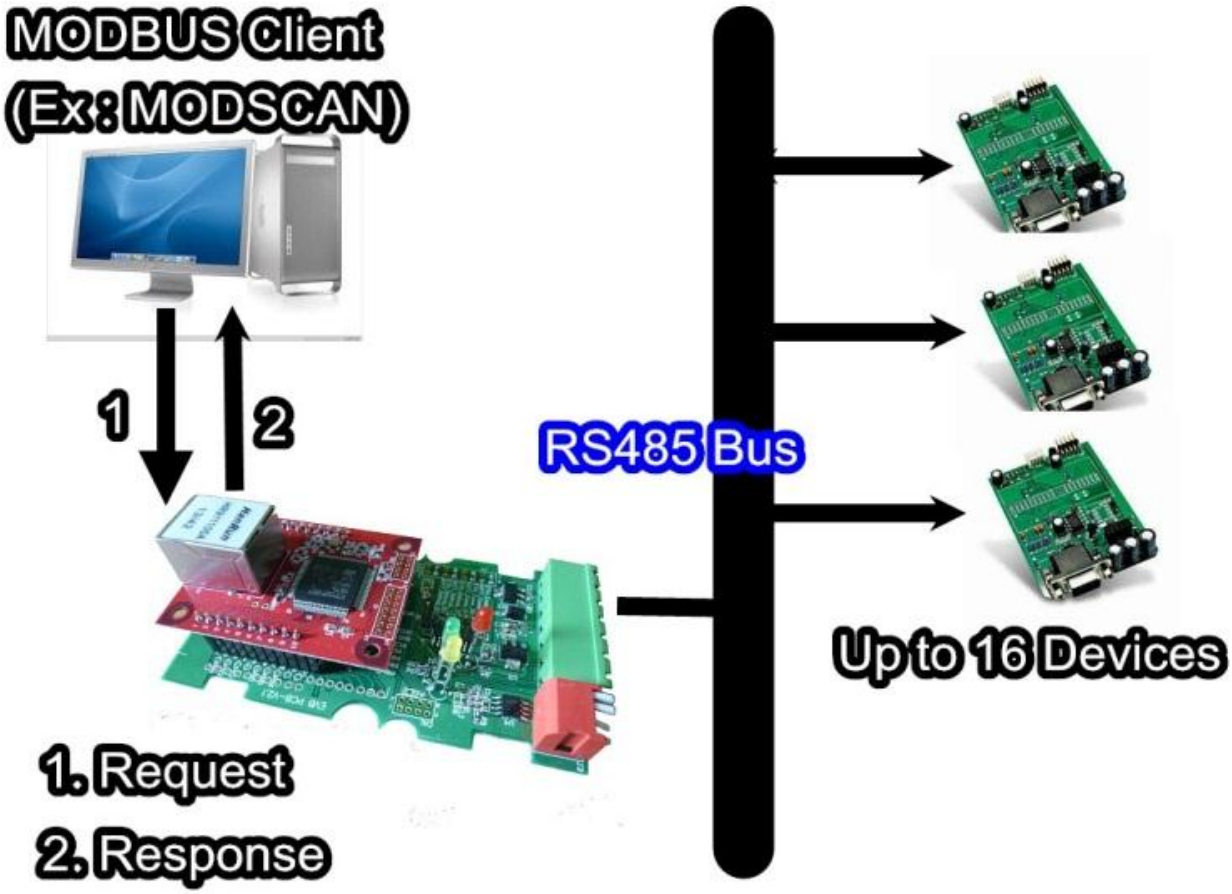
3.2.4 MODBUS gateway example:



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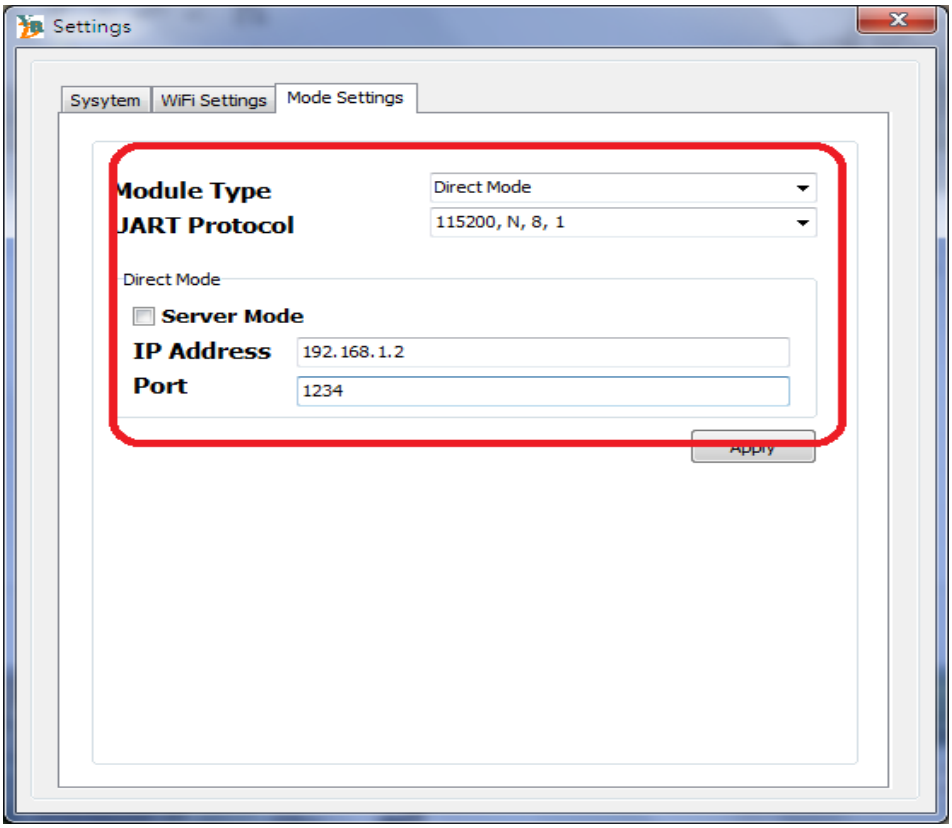
3.3 DIRECT MODE (TCP CLIENT)

3.3.1 Using utility configuration:



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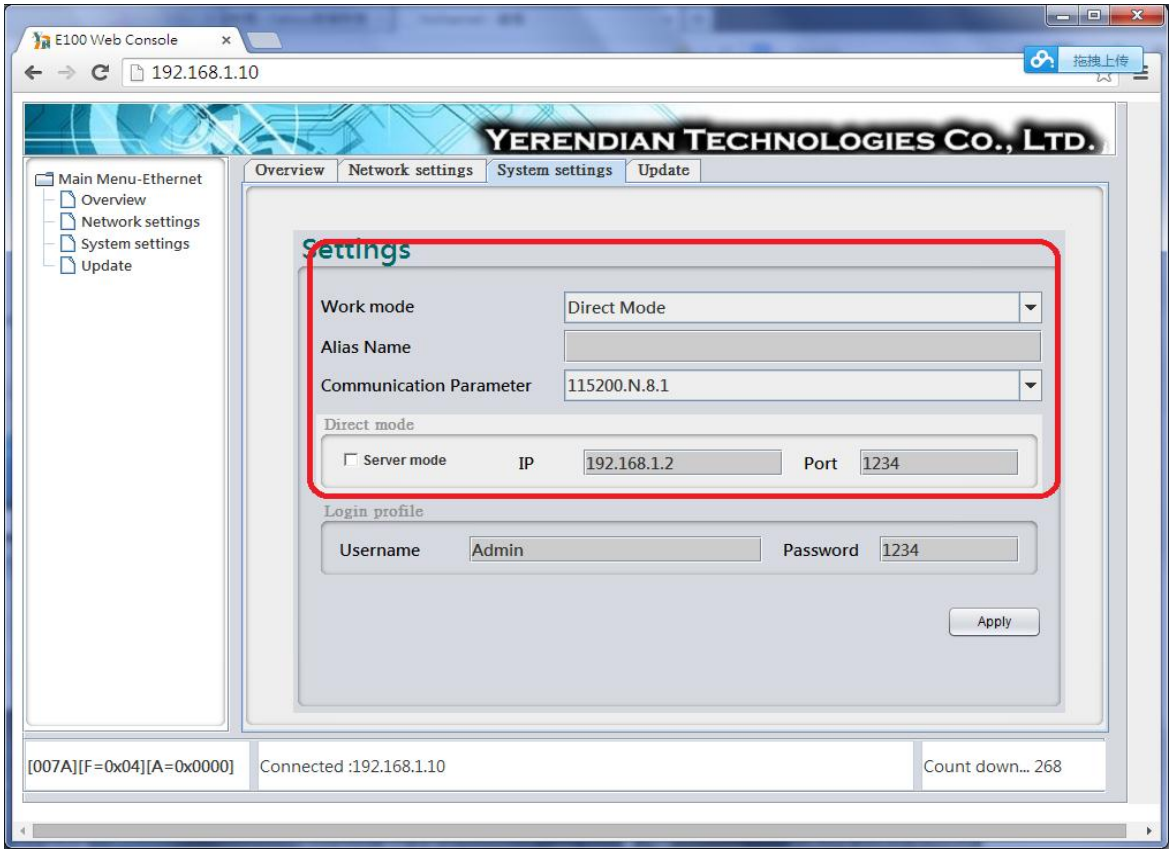
3.3.2 Using WEB console configuration:



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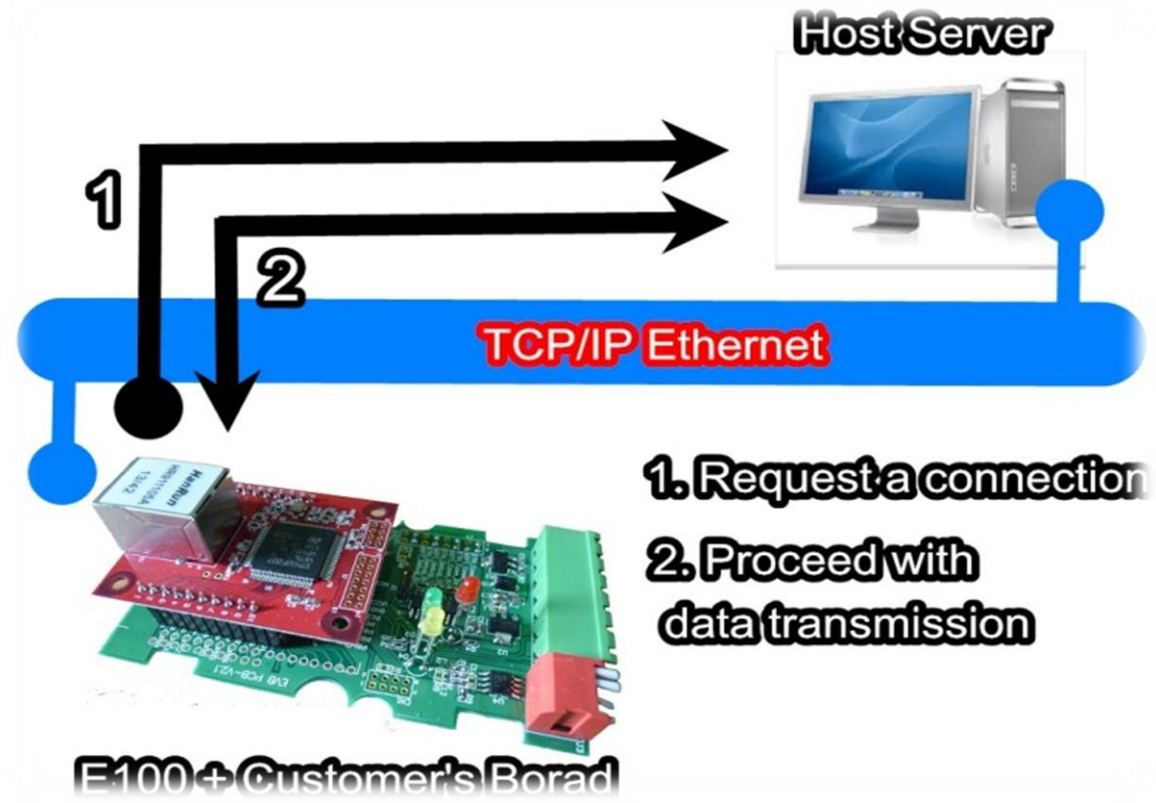
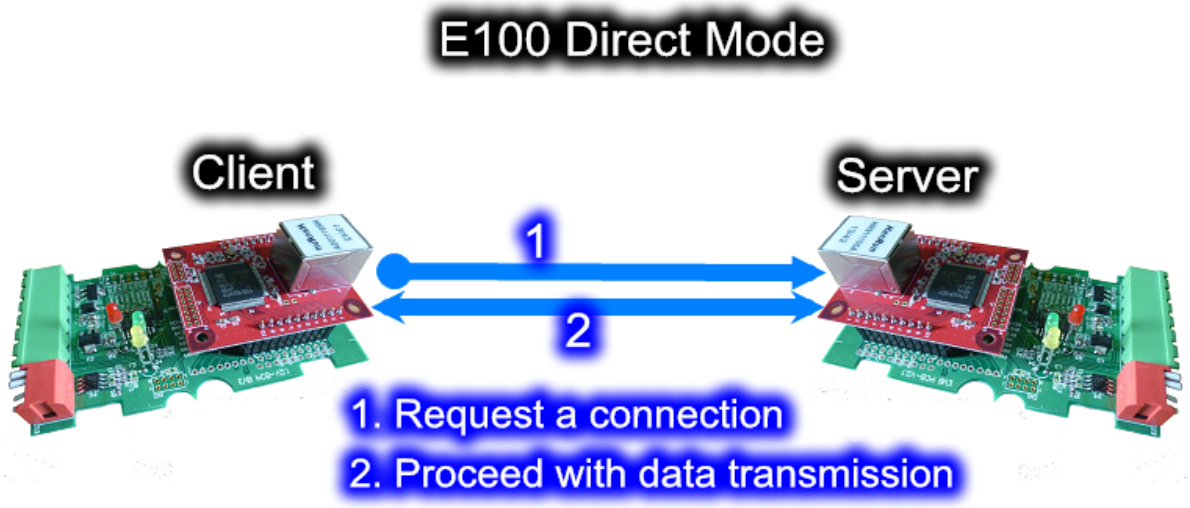
3.3.3 Schematic diagram -1:



3.3.4 Schematic diagram-2: (Replace the RS232/RS485 then extend the distance)



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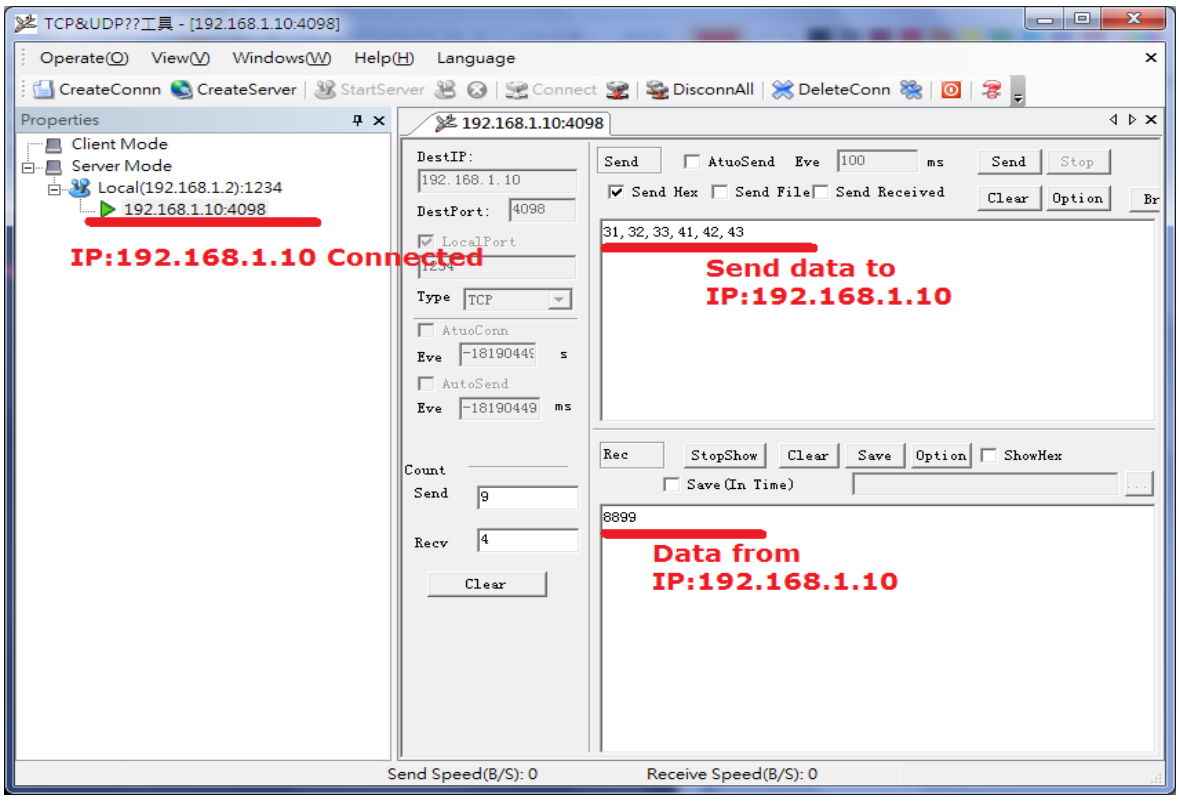
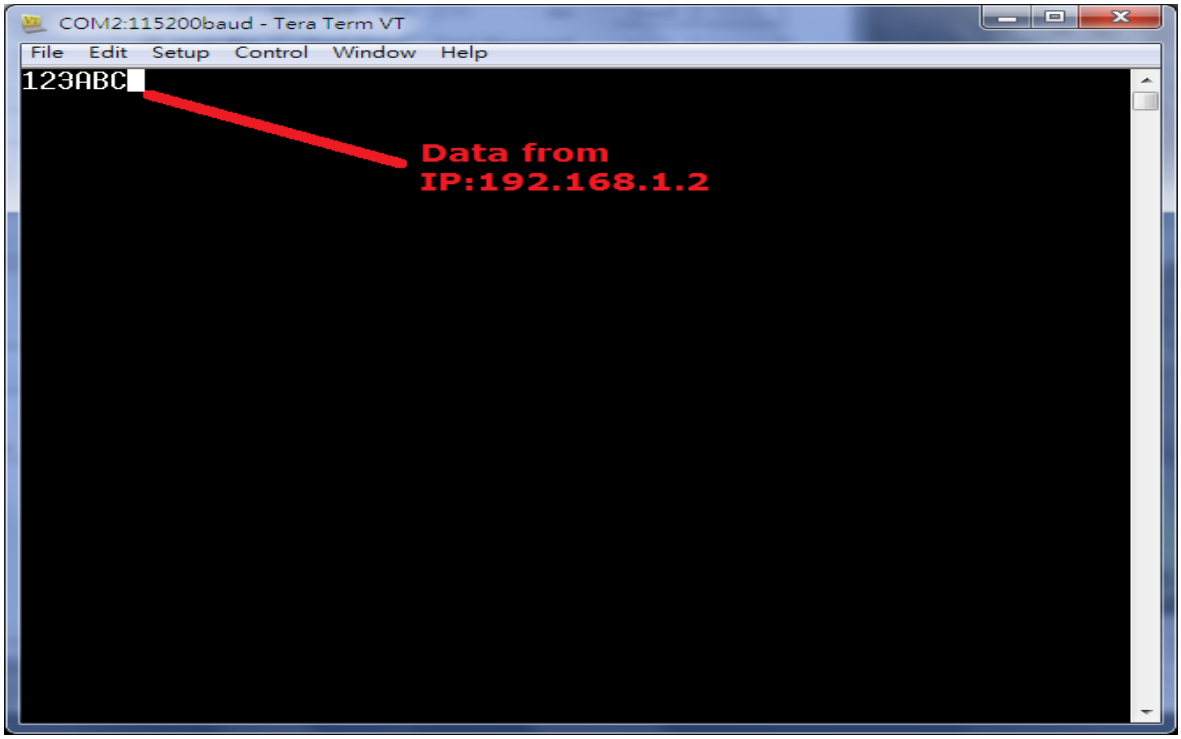
3.3.5 Direct mode TCP client example:





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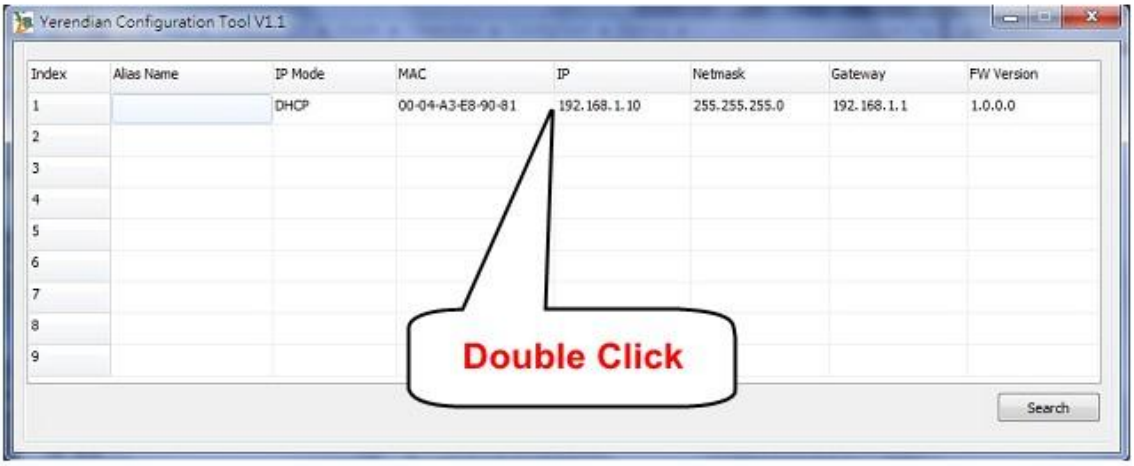
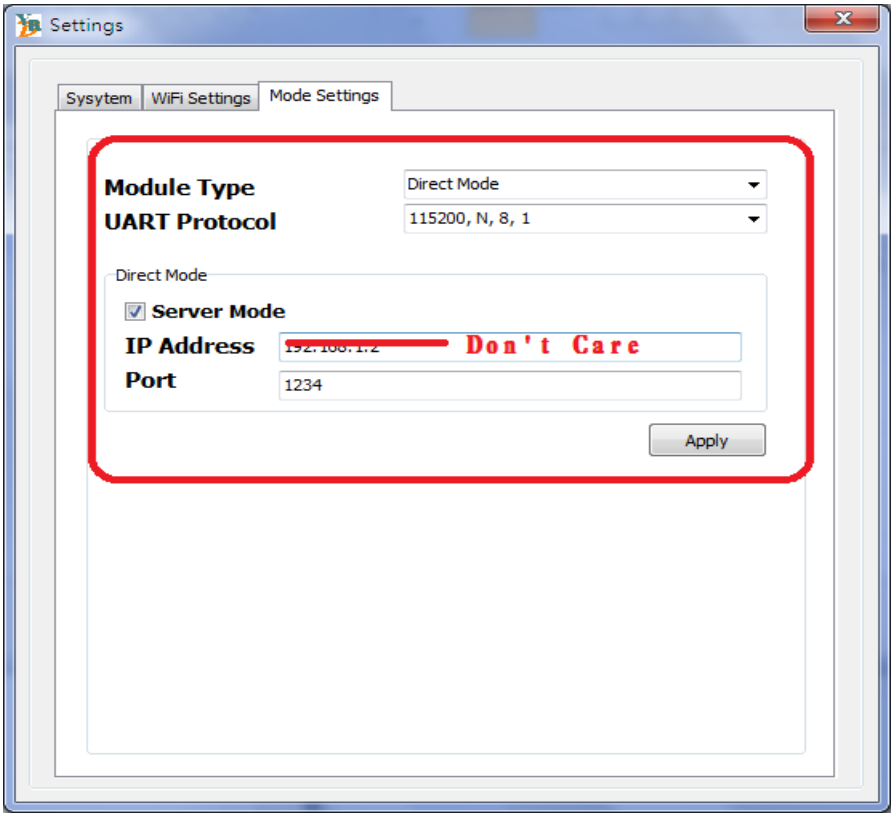
3.4 DIRECT MODE (TCP SERVER)

3.4.1 Using utility configuration:





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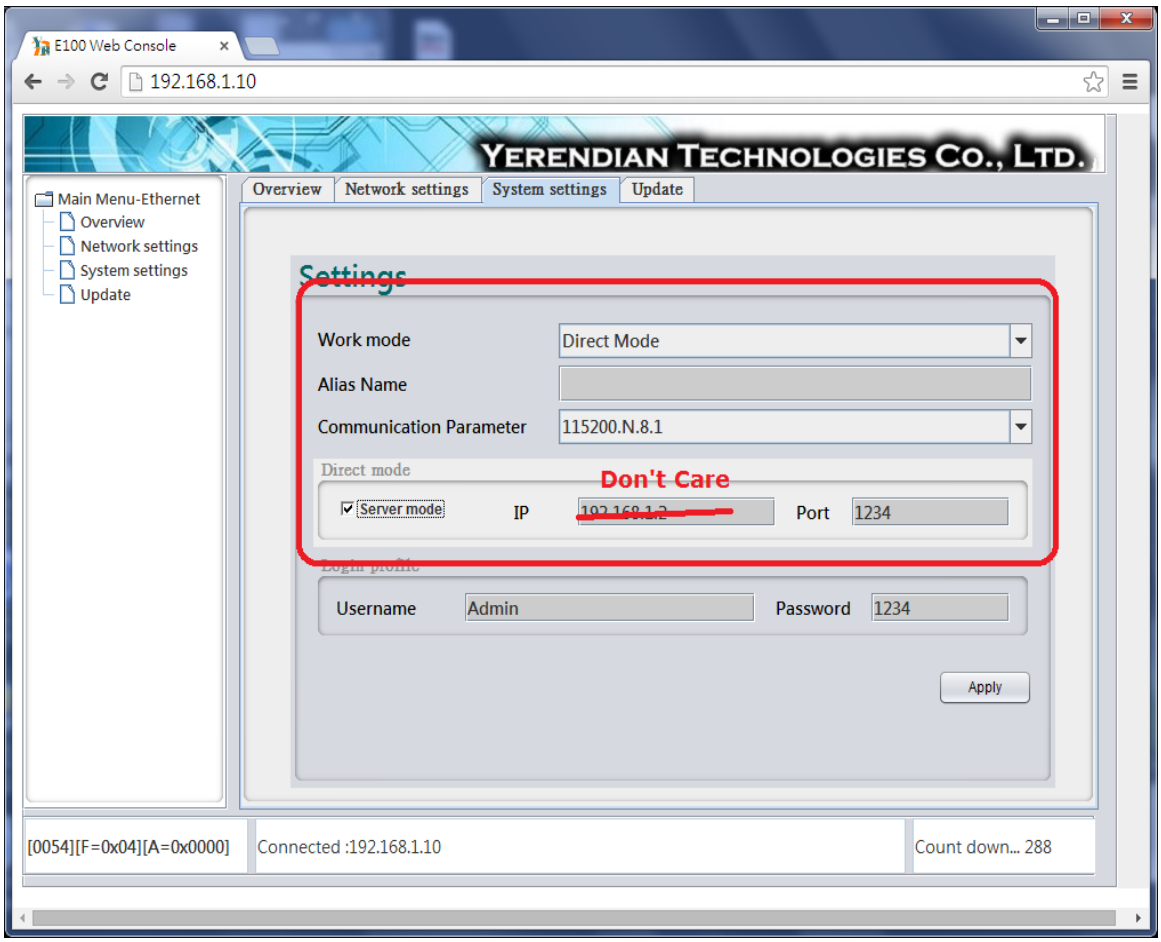
3.4.2 Using WEB console configuration:



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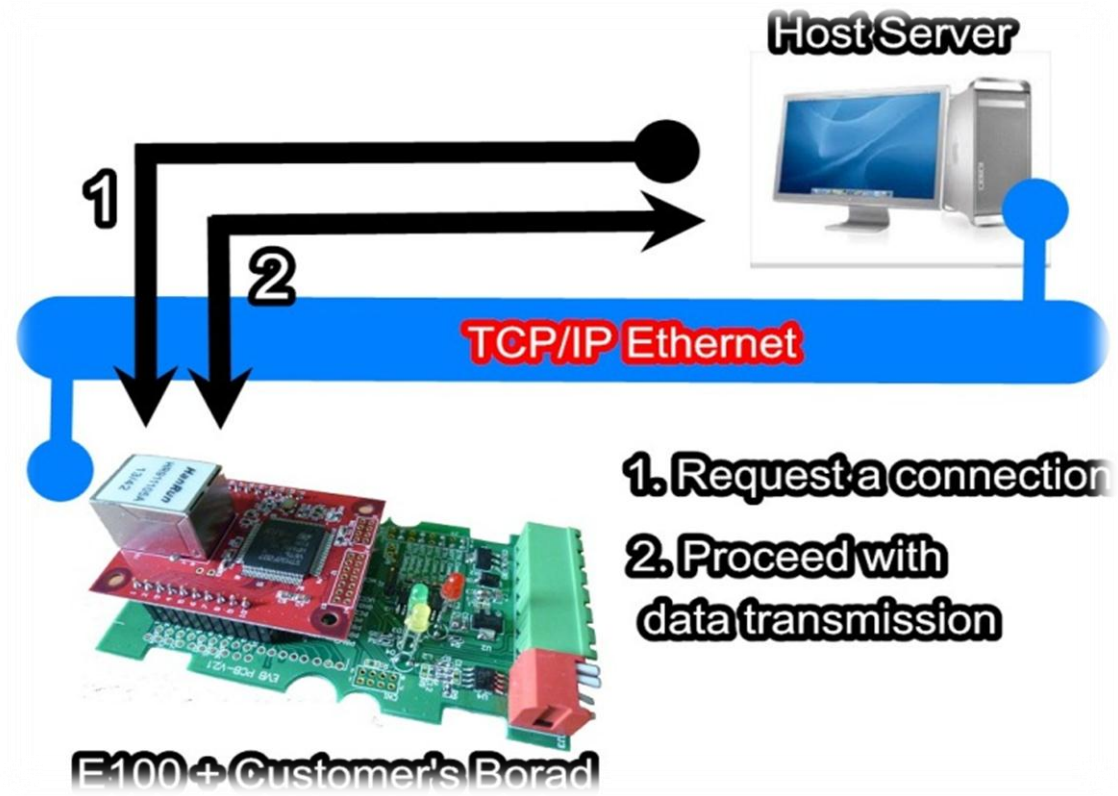
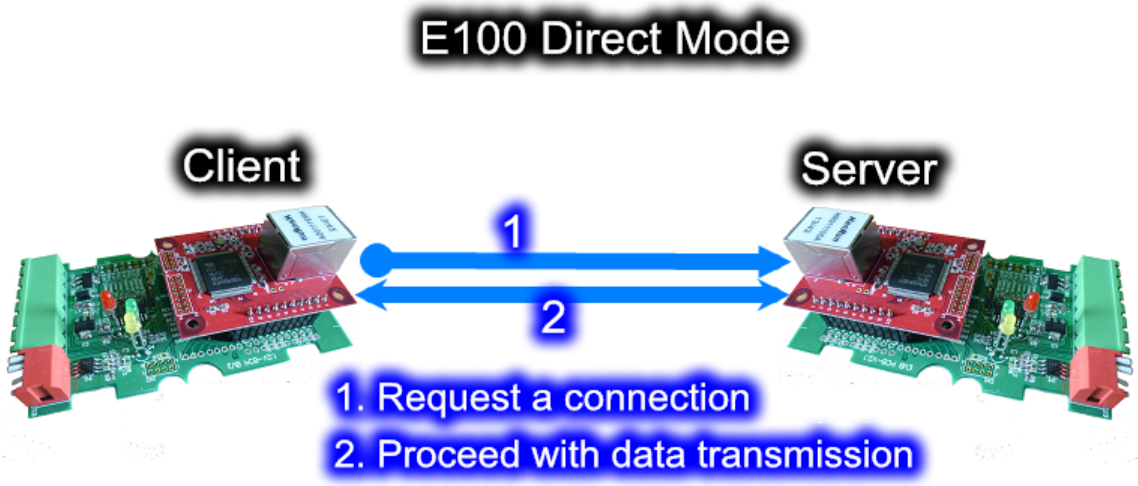
3.4.3 Schematic diagram-1:



3.4.4 Schematic diagram-2: (Replace the RS232/RS485 then extend the distance)



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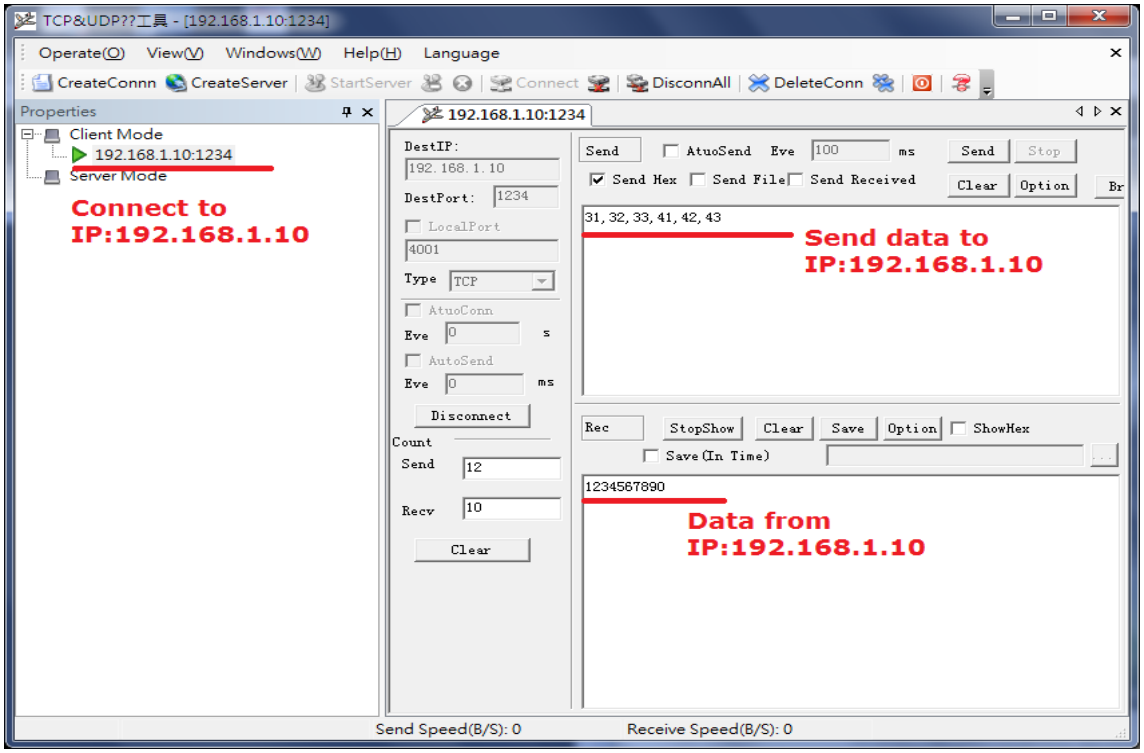
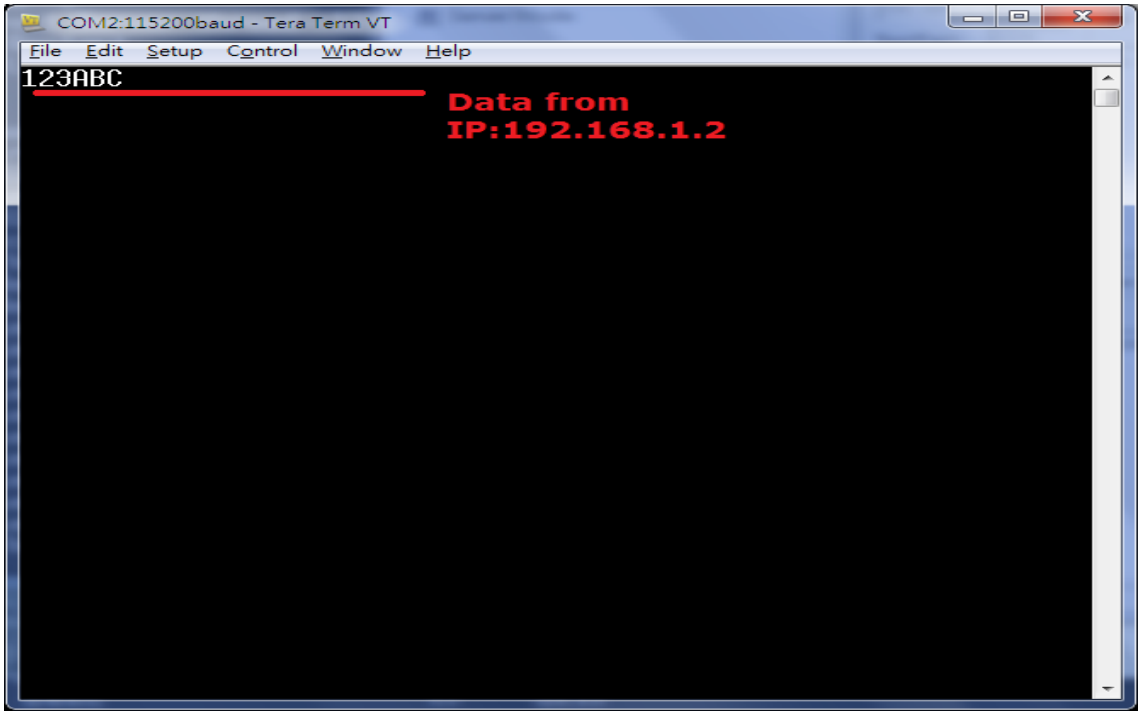
3.4.5 Direct mode TCP server example:





3.5 UDP MODE *OPTION

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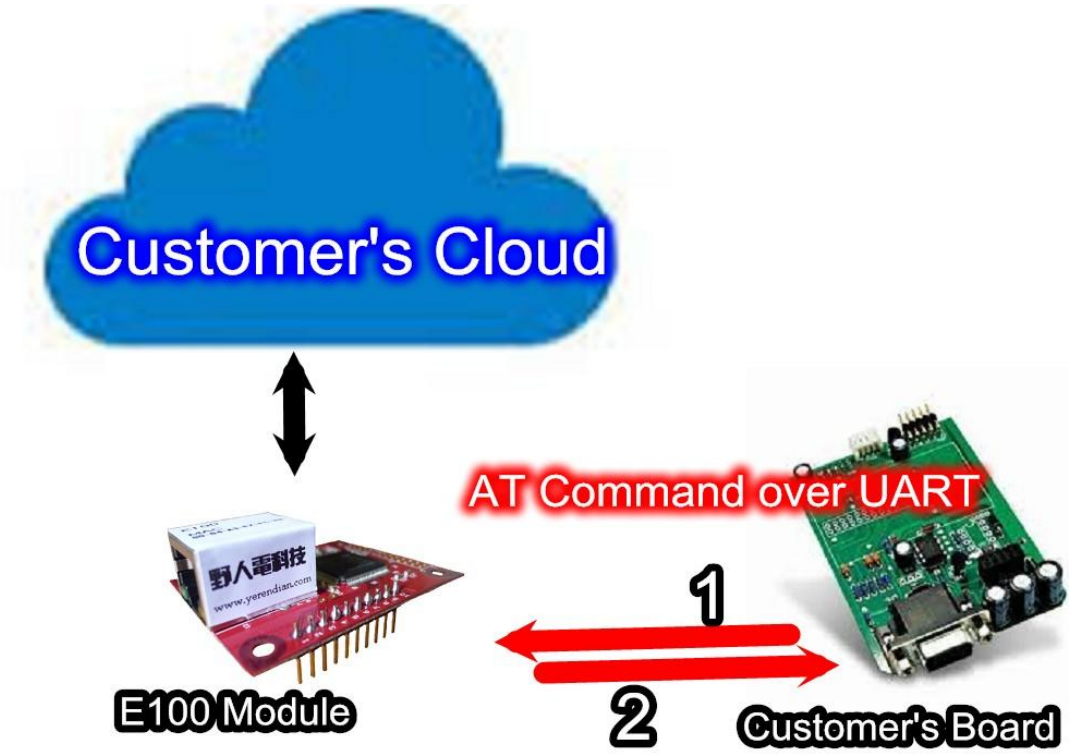
4. AT COMMAND SET GUIDE

The E100 supports AT Command for configuring the module. About AT Command set can refer to the URL

http://www.yerendian.com/dowload/AT_Command_Guide.xls

Figure 1.1 illustrates the interface.



Takes less then five at commands then you can connect to the internet over Ethernet.

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5. TECHNICAL SUPPORT CONTACT

Yerendian Technologies Co., Ltd.

Website: www.yerendian.com

YERENDIAN TAIWAN

No.28,Fuguo Rd.,Yilan City,Yilan County 260, Taiwan (R.O.C)

Tel: +886-988-180-499

E-Mail: sales@yerendian.com

Skype: yerendian

YERENDIAN CHINA

Moblie: +86-187-03597003

E-Mail: randy.huang@yerendian.com

Skype: hain-hai

Website: www.yerendian.com

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APPENDIX A. WELL KNOW PORT NUMBERS

This appendix is included for your reference. Listed below are port numbers that already have a well-established use. These port numbers should be avoided when assigning a port number to your E100 module.

TCP Socket	Application Service
0	reserved
20	FTP data
21	FTP control
25	SMTP
37	Time server
53	DNS
80	HTTP
502	MODBUS server

UDP Socket	Application Service
0	reserved
53	DNS

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69	TFTP
161	SNMP
162	SNMP traps
9000	Device Search

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APPENDIX B. MODBUS MAP

MODBUS Map for E100

3xxxx read only registers (support function 4)

Reference	Address	Data Type	Description
30001	0x0000	1 word	<R>Ethernet link status 0: Disconnect 1: Connected
30257	0x0100	21 word	<R> Product name Ansi C string
30278	0x0115	2 word	<R> Product ID
30280	0x0117	2 word	<R>Firmware version
30282	0x0119	2 word	<R>Firmware Build Date
30285	0x011B	3 word	<R>Ethernet MAC

4xxxx read/write registers (support function 3,6,16)

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Reference	Address	Data Type	Description
40257	0x0100	1 word	<RW>IP mode 0: Static IP 1: DHCP
40258	0x0101	2 word	<RW>IP address Ex: 0xC0A80102 192.168.1.2
40260	0x0103	2 word	<RW>Subnet mask Ex: 0xFFFFFF00 255.255.255.0
40262	0x0105	2 word	<RW>Gateway address Ex: 0xC0A801FE 192.168.1.254
40264	0x0107	2 word	<RW>DNS-1 Ex: 0xA85F0101 168.95.1.1
40266	0x0109	2 word	<RW>DNS-2 Ex: 0xA85F0101 168.95.1.1
40268	0x010B	1 word	<RW>Reset 1: Reset 0: Don't Care
40269	0x010C	1 word	<RW>Work mode 0: AT command mode 1: MODBUS gateway mode 2: Direct mode
40272	0x010F	1 word	<RW>Communication protocol 0: 2400 N,8,1 1: 4800 N,8,1

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			2: 9600 N,8,1 3: 19200 N,8,1 4: 38400 N,8,1 5: 57600 N,8,1 6: 115200 N,8,1 7: 230400 N,8,1 8: 2400 E,8,1 9: 4800 E,8,1 10: 9600 E,8,1 11: 19200 E,8,1 12: 38400 E,8,1 13: 57600 E,8,1 14: 115200 E,8,1 15: 230400 E,8,1 16: 2400 O,8,1 17: 4800 O,8,1 18: 9600 O,8,1 19: 19200 O,8,1 20: 38400 O,8,1 21: 57600 O,8,1 22: 115200 O,8,1 23: 230400 O,8,1
40273	**0x0110**	**8 word**	**<RW>Login user name**

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			Ansi C string
40281	**0x0118**	**8 word**	**<RW>Login password** Ansi C string
40289	**0x0120**	**8 word**	**<RW>Alias name** Ansi C string
40342	**0x0155**	**1 word**	**<RW>Web console enable** 0: disable 1: enable
40343	**0x0156**	**1 word**	**<RW>direct mode (server /client mode)** 0: client mode 1: server mode
40344	**0x0157**	**2 word**	**<RW>direct mode IP address**
40346	**0x0159**	**1 word**	**<RW>direct mode port**

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